EXPLORATORY DATA ANALYSIS OF DEBIT AND CREDIT CARD SPENDING ACROSS TYPES OF BANKS IN INDIA

Mohammad Irfan1
Rui Dias2
M. Sridhar3
Rosa Galvão4
Miguel Varela5
Rui Ribeiro6

ABSTRACT

Objective: This analysis aimed to identify the spending patterns of consumers in various types of banks.

Theoretical Framework: India has a strong banking system which encourages competition between different categories of banks. Technology improvements have brought about modifications to the payment mechanism. Therefore, the usage of non-cash payment methods tends to rise annually.

Method: Data was collected by card type transaction values and volumes of consumers across bank categories between Feb 2023-Feb 2024 from official websites of the Press Information Bureau, a nodal agency of the Indian government, and the Reserve Bank of India (RBI), which can be found at www.rbi.org.in. The Kruskal-Wallis test was used.

Results and Discussion: Results show clear and significant differences between categories of banks as well as where people spend. Analysis shows a clear difference between government and private banks in the following areas: First, in issuing debit and credit cards and consumer spending. Second, Ecommerce, POS, and ATM withdrawals. It was found that debit card issuance varies significantly by bank type, while credit card issuance does not.

Conclusion: The recommendation will be for banks to slow the issuance of credit cards so they can increase the value per transaction.

Keywords: Debit Card, Credit Card, Transaction Values, Volumes of Consumers, Public and Private Banks.

ANÁLISE EXPLORATÓRIA DOS DADOS RELATIVOS ÀS DESPESAS COM CARTÕES DE DÉBITO E DE CRÉDITO NOS DIFERENTES TIPOS DE BANCOS NA ÍNDIA

RESUMO

Objetivo: Esta análise teve como objetivo identificar os padrões de gasto dos consumidores em vários tipos de bancos.

1 NSB Academy, Business School, Bangalore, India. E-mail: drmohdirfan31@gmail.com Orcid: https://orcid.org/0000-0002-4956-1170
2 Instituto Superior de Gestão (ISG), Instituto Politécnico da Lusofonia, Lisboa, Portugal. E-mail: rui.dias@isg.pt Orcid: https://orcid.org/0000-0002-6138-3098
3 NSB Academy, Business School, Bangalore, India. E-mail: sridhar@nsb.edu.in
4 Instituto Politécnico de Setúbal, School of Business and Administration, Setúbal, Portugal. E-mail: rosa.galvao@esce.ip.pt Orcid: https://orcid.org/0000-0001-8282-6604
5 Instituto Superior de Gestão (ISG), Lisboa, Portugal. E-mail: miguel.varela@isg.pt Orcid: https://orcid.org/0000-0001-8388-1250
6 Instituto Politécnico da Lusofonia, Lisboa, Portugal. E-mail: p3113@ulusofona.pt Orcid: https://orcid.org/0000-0001-7380-0197
Enquadramento Teórico: A Índia tem um sistema bancário forte que incentiva a concorrência entre diferentes categorias de bancos. As melhorias tecnológicas introduziram modificações no mecanismo de pagamento. Por conseguinte, a utilização de métodos de pagamento que não em numerário tende a aumentar anualmente.

Método: Os dados foram obtidos por valores de transação de tipo de cartão e volumes de consumidores em categorias de bancos entre fevereiro de 2023 e fevereiro de 2024, de sites oficiais de Press Information Bureau, uma agência nodal do governo indiano, e do Reserve Bank of India (RBI), que podem ser encontrados em www.rbi.org.in. Foi usado o teste de Kruskal-Wallis.

Resultados e Discussão: Os resultados mostram diferenças claras e significativas entre as categorias de bancos, bem como entre os locais onde as pessoas gastam. A análise mostra que existe uma clara diferença entre os bancos públicos e privados: Primeiro, padrões de emissão de cartões de débito e crédito e gastos do consumidor. Segundo, comércio eletrônico, POS e levantamentos em ATM. Descobriu-se que a emissão de cartões de débito varia significativamente por tipo de banco, enquanto a emissão de cartões de crédito não varia.

Conclusão: A recomendação será que os bancos abrandem a emissão de cartões de crédito para poderem aumentar o valor por transação


ANÁLISIS EXPLORATORIO DEL GASTO CON TARJETAS DE DÉBITO Y CRÉDITO EN LOS DISTINTOS TIPOS DE BANCOS DE LA INDIA

RESUMEN

Objetivo: Este análisis tenía como objetivo identificar los patrones de gasto de los consumidores en distintos tipos de bancos.

Marco Teórico: India cuenta con un sólido sistema bancario que fomenta la competencia entre las distintas categorías de bancos. Las mejoras tecnológicas han provocado modificaciones en el mecanismo de pago. Por lo tanto, el uso de métodos de pago distintos del efectivo tiende a aumentar anualmente.

Método: Se recopilaron datos por tipo de tarjeta, valores y volúmenes de transacciones de consumidores de distintas categorías de bancos entre febrero de 2023 y febrero de 2024, de los sitios web oficiales de la Oficina de Información de Prensa, una agencia nodal del gobierno indio, y del Banco de la Reserva de la India (RBI), que pueden consultarse en www.rbi.org.in. Se utilizó la prueba de Kruskal-Wallis.

Resultados y Discusión: Los resultados muestran diferencias claras y significativas entre las categorías de bancos, así como entre los lugares de gasto. El análisis muestra que existe una clara diferencia entre los bancos públicos y los privados en: Primero, Patrones de emisión de tarjetas de débito y crédito y gasto de los consumidores. En segundo lugar, el comercio electrónico, los puntos de venta y las retiradas en cajeros automáticos. Se descubrió que la emisión de tarjetas de débito varía significativamente según el tipo de banco, mientras que la emisión de tarjetas de crédito no.

Conclusión: La recomendación es que los bancos ralenticen la emisión de tarjetas de crédito para que puedan aumentar el valor por transacción.

Palabras clave: Tarjeta de Débito, Tarjeta de Crédito, Valor de las Transacciones, Volumen de Consumidores, Bancos Públicos y Privados.

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1 INTRODUCTION

The Government of India (GOI) has undertaken numerous initiatives to attain the Sustainable Development Goals (SDGs). Since the most vulnerable members of society would benefit from these innovations by having basic access to financial services and products, it is important to ease the access and use of various financial instruments and payment modes in order to end poverty in all of its forms by the year 2030 (United Nations, 2015).

The nation must support banking and financial institutions to increase access to a range of banking, insurance, and financial products and services for all in order to meet the measurable targets of SDG 8, which is to "promote sustained, inclusive and sustainable economic growth, full and productive" (United Nations, 2015).

The idea is to encourage individuals and teenagers aged 15 to 21 to open bank accounts at any bank or financial organization. Through this procedure, nearly all eligible citizens of the nation would have access to financial services. The government of India gathered data for the 77th National Sample Survey (NSS) during the 'All India Debt and Investment Survey' (AIDIS) from January to December 2019 to meet the aim.

In the financial year 2023–24, the Indian e-tail market is predicted to grow to a startling US$ 60 billion, according to a forecast by consultancy Knight Frank India. By 2028–2029, this expanding industry is expected to expand at a compound annual growth rate (CAGR) of 18%.

The 'Think India Think Retail 2024' report underscores the noteworthy prospects of the retail sector in India, which constitutes 10% of the nation's GDP and gains employment for 8% of the labour force. Retail destinations and shopping centres are emerging in Tier 2 cities and major metropolitan areas, indicating the industry's rapid evolution. According to the analysis, shopping centres in Tier 1 and Tier 2 cities should see revenue growth at a compound annual growth rate (CAGR) of 23% over the same time, assuming current levels of consumption across all retail categories (IBEF, 2024).

Mr S Jaishankar, the minister of external affairs, emphasized the impressive rise in cashless payments in India, noting that 10–12 billion such transactions are processed monthly. He underlined that other countries are looking to India to learn from its success because of its digital infrastructure, making India a global brand. The US, where only four billion cashless payments are made in a year, is in stark contrast to India, as Jaishankar pointed out (IBEF, 2024). 2020 has shown a decline in the volume of transactions resulting from the combined development of the three non-cash transactions. Due to the Covid-19 epidemic, which has started to spread throughout Indonesia, there has been a decrease.
This study aims to shed light on the spending patterns of consumers in the various types of banks regarding payment methods.

2 LITERATURE REVIEW

Salima & Wahyuningsih's (2020) recent study showed that usage of non-cash payment methods tends to rise annually. The convenience of non-cash transactions, which can lead to a reduction in transaction costs and eventually boost economic growth, is what is driving the public's adoption of these methods. Apart from facilitating transactions, non-cash transactions are anticipated to decrease the demand for bank-issued currency and impact the central bank's execution of its monetary policy regulation responsibilities (Costa Storti & De Grauwe, 2001).

The demand for money function—which is one of the key variables the central bank considers when deciding on its monetary policy—has been impacted by the growing use of non-cash payment methods like debit cards, credit cards, and electronic money. The introduction of non-cash payment options is causing a steady shift in how people conduct economic transactions. This is because using this kind of payment card has replaced cash as a means of transaction for individuals. From a macroeconomic perspective, if the economy as a whole promotes the usage of cashless payment cards, the demand for money will decline (Yilmazkuday, 2006).

Technology improvements have brought about modifications to the payment mechanism. Due to changes in people's lifestyles and technological advancements, innovations pertaining to non-cash transactions are still growing (Lintangsari et al., 2018).

Technology development and the rise in card-based e-commerce payments further drive this (Lubis, 2019). The combined development of the three non-cash transactions has resulted in a drop in transaction volume as of 2020. The Covid-19 epidemic, which has started to spread throughout Indonesia, is to blame for the drop. After the strategy of limiting economic activity was implemented, individuals began to voice their dissatisfaction with the deteriorating state of the economy, which relaxed the regulations. As a result, in 2021 there were once again increases in the amount of debit card and electronic money transactions. Credit card transactions, however, have not increased significantly in the interim. As a result, practically all parties involved—including academics, businesses, government agencies, multilateral development organizations, the financial services industry, and a wide spectrum of individuals—are investigating various digital currencies and electronic payment systems. Given that every
nation's financial system is essential to its total economy, this has surely had a beneficial and major impact on Nigeria's modern development and economic sustainability.

By the end of 2020, India will have installed a substantial number of PoS terminals, demonstrating great progress in that regard. Even so, there remains room for improvement in terms of the number of individuals served by each deployed PoS station; as of the end of 2020, one PoS terminal could accommodate 296 persons.

Interpretation of Figure 1: A PoS terminal’s capacity to serve a single customer can be used to gauge the availability of payment acceptance infrastructure throughout the nation in 2020 (RBI, 2022). The nation's acceptance infrastructure must be more densely distributed to guarantee the deepening of digital payments. Between 2017 and 2020, a PoS terminal serviced 296 users on average, an increase from 426 persons in 2017, Press Information Bureau (PIB) (2023). When compared to other benchmarked countries, the figure remains the highest. In January 2021, RBI operationalized the PIDF, focusing on improving acceptance infrastructure in rural areas, to solve supply-side challenges in acceptance infrastructure and boost the deployment of PoS terminals throughout the nation. Due to the country's high mobile penetration rate as well as the sheer volume of SMEs and microbusinesses, mobile PoS and Smart PoS are now widely used.

Figure 1
People per PoS terminal

Source: BIS Red Book ‘Country Tables’ compiled by the Bank of International Settlements

India ranked third in the world behind China and Russia in terms of the total number of ATMs in use as of the end of 2020. However, India's ATM deployment grew at a CAGR of 2% between 2017 and 2020, whereas Russia's increased at a CAGR of 17%.

According to Figure 2, there were 233 thousand ATMs in India as of the end of 2020, with over 11,000 additional ATMs installed between 2017 and 2020. Compared to the 53
thousand and 116 thousand new ATMs that China and Russia deployed during the same periodthis is a much smaller number in 2020 (RBI, 2022).

In India, account holders in rural regions frequently use PoS terminals—which serve as "micro-ATMs"—to withdraw cash from nearby merchants and Business Correspondents (BCs). These BCs use AePS, which enables Aadhaar-based verification for online, interoperable transactions at micro-ATMs. By the end of December 2020, India had deployed almost 356,000 micro-ATMs Press Information Bureau (PIB) (2023).

Figure 2

ATMs deployed

Source: BIS Red Book 'Country Tables' compiled by the Bank of International Settlements

Among the benchmarked countries, India has the third-highest absolute number of ATMs deployed. It performs poorly; nevertheless, when looking at the reach of ATMs, as of the end of 2020, a single ATM served over 5800 individuals.

Interpretation of Table 3, People per ATM, or ATM density, is a crucial metric for assessing the availability of ATMs around the nation. There may not be enough ATM infrastructure to meet the populace's needs if many people are using each one. India has the lowest ATM density among the benchmarked countries, decreasing slightly from 5919 in 2017 to 5817 in 2020. Micro-ATMs contribute significantly to financial inclusion in India by serving mainly the unbanked and rural populations, complementing the ATM infrastructure 2020 (RBI, 2022).
India is the leader in credit transfers regarding the total volume of transactions in 2020 as well as the compound annual growth rate over the three years from 2017 to 2020. This is explained by the abundance of 24-hour credit transfer services that enable quick money transfers.

Interpretation of Figure 4: In 2020, the volume increased at a compound annual growth rate (CAGR) of 68% to reach an astounding 27.97 billion. NEFT, NACH Credit, IMPS, and UPI are the methods used in India for retail credit transfers in 2020 (RBI, 2022).

Because "interoperable payment systems" have completely changed the payment environment, credit transfer payments have grown significantly in India. While banks and other third-party application providers may now more easily access the payment infrastructure, consumers benefit from interoperability. In addition to being used to scan QR codes and process merchant payments, credit transfer systems are also used to effectuate financial transfers to recipients as an alternative to cash and credit cards Press Information Bureau (PIB) (2023).
The proportion of credit transfers in total payment system transactions increased from 37.5% in 2017 to 68.8% in 2020, making it the most significant percentage among the benchmarked nations.

Interpretation of Figure 5: Customers prefer credit transfer systems over alternative payment methods (direct debits, paper clearing), as well as payment instruments (cards, e-Money), when credit transfers account for a large portion of total payment transactions. Retail credit transfer systems (NEFT, IMPS, UPI, AePS, NACH) are widely available in India; several systems are available 24/7 and allow for real-time payment processing. In terms of the share of credit transfers in 2020, this has helped India take the lead. As of 2020, credit transfers account for 56% of all payments made in Indonesia 2020 (RBI, 2022).

**Figure 5**

*Share of credit transfers in payment systems (volume)*

![Credit transfers share in payment systems](image)

Source: BIS Red Book ‘Country Tables’ compiled by the Bank of International Settlements

Regarding e-money transaction volume, India performed well, with over 4950 million transactions in 2020. Pre-paid payment instruments are used for the transactions. These can be cards or wallets provided by permitted non-bank issuers or approved banks.

According to the interpretation of Figure 6, the number of e-money transactions increased steadily between 2017 and 2020 due to the initiatives. In 2020, India ranked fourth among the benchmarked nations for which data is available, with 4958 million e-money transactions, behind only Japan (8641 million), the United States of America (7486 million), and Hong Kong (5206 million). A compound annual growth rate (CAGR) of 13% has been observed in India’s e-money transactions from 2017 to 2020 (RBI, 2022).
There is a rich body of literature on the impact of economic and financial about debit cards, credit cards, mobile transactions, UPI, and NEFT; however, the focus is not being limited to just India.

Salima & Wahyuningsih's (2020) recent study shows that the usage of non-cash payment methods tends to rise annually. The convenience of non-cash transactions, which can reduce transaction costs and eventually boost economic growth, is driving the public's adoption of these methods. Apart from facilitating transactions, non-cash transactions are anticipated to decrease the demand for bank-issued currency and impact the central bank's execution of its monetary policy regulation responsibilities (Costa Storti & De Grauwe, 2001).

According to monetary officials' estimates, the money supply may be slowed down and money circulation will become more transparent. According to Wijayanta & Widyaningsih (2006) and Azka (2017), the more non-cash transactions are used, the less money is needed.

According to research, debit card features and electronic money have a favorable and considerable impact on Indonesia's money supply M1 (Panjaitan, 2021). In the meantime, the credit card variable significantly and negatively impacts Indonesia's M1 money supply. Additionally, this is consistent with the study by Lintangsari et al. (2018), which explains that while ATM credit has no appreciable impact on the money supply (M1), e-money and ATM debit transactions have a major impact on it (M1). Credit card transactions, however, have no appreciable impact on the M1 money supply, according to studies by Wikaksono & Huda, 2023; Sari, 2020. According to these findings, the money supply will rise in proportion to the number of debit card transactions. The reason for this is the annual rise in debit card transactions.
Consumer demands for quicker and more seamless transactions are growing. This is consistent with studies (Lintangsari in Aminy, 2022).

ATM/debit cards significantly reduce the velocity of money, according to the study's findings based on the t-Test results. There is a notable enhancement in the velocity of money while using credit cards. The Velocity of Money is unaffected by E-Money, nevertheless. ATM/Debit Cards, Credit Cards, and E-Money all significantly impact the Velocity of Money at a 93% confidence level, according to the F Test result (Valencia & Sishadiyati, 2023).

According to short-term estimates, retail payments, interest rates, and exchange rates are the positive shocks that cause the money supply (M1) to respond most, whereas card payments and pre-paid payment instruments are the negative shocks that cause it to respond less. In the short term, a decline in card payments combined with a rise in retail payments, pre-paid payment methods, interest rates, and exchange rates would significantly impact M3. (Chaudhry, Chandni, & Dudeja, 2023).

The study's findings show that while counterfeit money has little to no impact on electronic money transactions, the money supply (M1) has a positive and large impact on them. Additionally, economic growth positively and significantly impacts electronic money transactions (Putri & Prasetyo, 2020).

3 MATERIALS AND METHODS

This research employs quantitative techniques focusing on hypothesis testing to quantify how one variable affects other variables and draw conclusions. India's territory serves as the study's population. This information was gathered from the official websites of the Press Information Bureau, a nodal agency of the Indian government, and the Reserve Bank of India (RBI), which can be found at www.rbi.org.in. The secondary data used is a monthly time series within a period of credit and debit card transaction values and volumes of consumers across different categories of banks, from Feb 2023 to Feb 2024.

This research focused on the different types of banks like public, private, foreign, payment, and small banks, represented in Figure 7.
Figure 7

*Types of Banks Applying in Research*

![Bar chart showing counts of different banks in India, RBI data]

Source: Count of different banks in India, RBI data

**Hypothesis formulated:**

Several hypotheses were formulated to identify the spending patterns of consumers in various types of banks,

**H₀₁:** There is no significant difference between government and private banks issuing debit cards.

**H₀₂:** There is no significant difference between government and private banks in issuing credit cards.

**H₀₃:** There is no significant difference in overall credit card spending between e-commerce, POS spending, and ATM withdrawals.

**H₀₄:** There is no significant difference between debit card spending between e-commerce, POS spending, and ATM withdrawals

**Kruskal-Wallis H-test**

To test the hypothesis formulated, the Kruskal-Wallis H-test was be applied. The null hypothesis, according to which the population medians of each group are equal, is tested using the Kruskal-Wallis H-test, which is a non-parametric equivalent of ANOVA. The test is conducted on two or more independent samples of varying sizes. Keep in mind that proving the null hypothesis wrong does not reveal which group is different, Wheelan, C. (2014).
Exploratory Data Analysis of Debit and Credit Card Spending Across Types of Banks in India

\[ H = \frac{12}{n(n+1)} \sum_{j=1}^{c} \frac{T_j^2}{n_j} - 3(n+1) \]  \hspace{1cm} (1)

4 RESULTS AND DISCUSSION

The following tables show the Kruskal-Wallis test for each hypothesis formulated. For hypothesis "H\(_0\)1: There is no significant difference between government and private banks in issuing debit cards", results are shown in Table 1.

Table 1

Government and Private Banks in Issuing Debit Cards

<table>
<thead>
<tr>
<th>Kruskal Result</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>156.25</td>
<td>0.00</td>
</tr>
</tbody>
</table>

This p-value (< 0.05) means the null hypothesis can be rejected. Regarding credit cards, table 2 shows the results for hypothesis "H\(_0\)2: There is no significant difference between government and private banks in issuing credit cards".

Table 2

Government and Private Banks in Issuing Credit Card

<table>
<thead>
<tr>
<th>Kruskal Result</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.56</td>
<td>0.21</td>
</tr>
</tbody>
</table>

This p-value is >0.05, so the null hypothesis can not be rejected, which means credit card issuing has a similar pattern across public and private banks. So, debit card issuance varies significantly by bank type, while credit card issuance does not.

Table 3 displays the results regarding hypothesis "H\(_0\)3: There is no significant difference in overall credit card spending between e-commerce, POS spending, and ATM withdrawals".

Table 3

Government and Private Banks in Issuing Credit Card

<table>
<thead>
<tr>
<th>Financial Transaction</th>
<th>t-Statistic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pos vs e-commerce spending</td>
<td>-3.64</td>
<td>0.000</td>
</tr>
<tr>
<td>Pos vs ATM withdrawals</td>
<td>9.63</td>
<td>0.000</td>
</tr>
<tr>
<td>ATM withdrawals vs e-commerce spending</td>
<td>9.25</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Clearly, all null hypotheses can be rejected; the credit card spending level clearly varies between all 3 categories.

Regarding debit card transaction amounts, in Table 4 are the results for hypothesis "H04: There is no significant difference between debit card spending between e-commerce, POS spending, and ATM withdrawals".

**Table 4**

*Government and Private Banks in Issuing Debit Cards*

<table>
<thead>
<tr>
<th>Financial Transaction</th>
<th>t-Statistic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pos vs e-commerce spending</td>
<td>4.91</td>
<td>0.000</td>
</tr>
<tr>
<td>Pos vs ATM withdrawals</td>
<td>-8.84</td>
<td>0.000</td>
</tr>
<tr>
<td>ATM withdrawals vs e-commerce spending</td>
<td>-9.51</td>
<td>0.000</td>
</tr>
</tbody>
</table>

It is possible to see, in Figure 8, that the ATMs are growing fastest among private and small finance banks while they have actually declined for foreign banks over the past year.

**Figure 8**

*ATM Setup by Banks*

Similarly, for POS terminals, as shown in Figure 9, the number of POS terminals has grown fastest for the payment banks and small finance banks, while it has declined for private banks over the past year.
Figure 10 shows that e-commerce is the fastest-growing category of credit card spending across banks, while ATM withdrawals have grown very slowly. However, for debit card spending, the highest growth is from withdrawals at POS terminals, followed by e-commerce spending, both in transaction volumes and total transaction value. Again, here it can be seen de growth in the foreign bank category.

Figure 10
Growth in Credit Card Spending by Categories
Figure 11 clearly shows that POS volume spending growth is greater in debit cards, which contrasts with the growth in e-commerce spending on credit cards.

**Figure 11**

*Growth in Debit Card Spending by Categories by Value*

Figure 12 shows that credit card usage and spending, both in transaction value and volumes, are growing faster than debit cards in all categories of spending across all types of banks, barring foreign ones. For e-commerce, credit card spending is growing faster than debit card usage, while in POS transactions, debit card usage is growing faster.

**Figure 12**

*Growth in Debit card spending by Categories by Transactional Volume*
Figure 13 clearly shows that banks have issued more credit cards over the year than debit cards, and private and small finance banks are driving this growth. One point to note here is that the number of debit cards issued by public banks is zero, and they have reduced their existing card base by around 2% while their credit cards continue to grow.

**Figure 13**

*Growth in Debit Vs Credit Cards issued over one year*

Figure 14 shows that the debit card withdrawals have actually reduced compared to a year ago, while the credit card withdrawals from ATMs have increased.

It also shows that public banks have done this more aggressively; their credit card ATM withdrawals have increased by nearly 42% compared to private banks' 13%, while debit card withdrawals have again reduced. Only small finance banks are seeing a positive growth in ATM withdrawals of debit cards.
Figure 14

*Growth Rate of ATM withdraw of Debit Vs Credit Card*

E-commerce spending on debit cards has not grown at the same pace as that of credit cards. Debit card spending appears to be reducing across the board, except for small finance banks. The category which reduced the most was POS withdrawal (not POS spending) in debit cards across bank types.

Figure 15

*Growth in Debit Card Spending by Categories Value*

Figure 16 shows that e-commerce spending is the fastest-growing category in credit cards in volumes, unlike in the credit card segment.
From Figure 17, it is possible to see that the UPI QR codes are growing much faster than the Bharat QR codes, the increase being driven by foreign and public banks for UPI and small finance banks for using them.
5 CONCLUSION

Debit card issuance and usage are declining, while credit card usage and issuance are increasing (in spending value and transaction volume). This is also supported by articles which are available online, and the trend is very clear. The only exception to declining debit card values is small finance banks' case.

Foreign banks are generally not performing well: Their credit and debit card value and volume of transactions are declining. Maybe some conclusion can be drawn about the environment not being conducive to their growth? Should it indicate that they are on their way out? If one category of banks is driving the growth of value and volume spending, these are clearly small finance banks. However, the actual volume and value of transactions are still very small, yet the trend is very clear: they are the only banks that are consistently growing. Can it be predicted that these will be the banks that will profit in the future, given the decreasing economies of scale of other banks? In general, e-commerce transactions are growing fastest (across both credit and debit cards, across value and volumes, across types of banks).

ATM withdrawals are growing at the slowest pace. So, e-commerce is driving growth in spending.

Regarding the average transaction value, it has grown fastest only with debit card transactions. It is believed that because credit card transaction volumes have increased very fast, the average size per transaction is growing very slowly.

The recommendation is for banks to slow the issuance of credit cards so they can increase the value per transaction. UPI QR codes are growing faster than Bharat QR codes. The growth in UPI codes is driven by foreign banks while in Bharat codes it is driven by small finance banks.

5.1 RECOMMENDATIONS

Foreign banks are only focusing on UPI QR codes, and everything else is shrinking for them. Credit card growth is increasing, and banks should increase the average transaction value to make it grow faster. There is a strong growth in e-commerce and then POS transactions compared to ATM withdrawals, so we predict that will continue. Small finance banks will drive card transactions as the rest of the world moves to UPI, given decreasing economies of scale.
5.2 DISCUSSION

This study shows that, in general, the issuance and use of credit cards is increasing across the board, particularly in public and private banks, while the issuance and spending on debit cards is declining. This may indicate that India's economy has become more dependent on credit or "pay later" schemes than having bank reserves before spending.

Also, it is seen that foreign banks have grown in almost all types of transactions involving debit and credit cards, while the small finance banks are the only ones where debit card usage is increasing. An important finding is that even in credit cards, the growth is in e-commerce spending, indicating that what happens in the e-commerce sector will play a significant role in determining the subsequent slowdown.

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